

**Prevalence of Adolescent Food Insecurity and Associated Factors among
Coffe Producing Woredas in Jimma Zone, South West Ethiopia.**

BY: - Getu Gizaw (BSc.)

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JIMMA UNIVERSITY
COLLEGE OF HEALTH SCIENCES
DEPARTEMENT OF POPULATION AND FAMILY HEALTH

**PREVALENCE OF ADOLESCENT FOOD INSECURITY AND
ASSOCIATED FACTORS AMONG COFFE PRODUCING WOREDAS
IN JIMMA ZONE, SOUTH WEST ETHIOPIA.**

ADVISORS:

1. Mr. Kalkidan Hassen (BSC, MSC, Assistant Professor)
2. Mrs. Misera Abdullahi (BSC, MPH, Assistant Professor)

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ABSTRACT

Background: -Individual food insecurity at the household level results from the interaction of a wider range of factors. These factors influence the amount and type of food which households are able to produce or purchase, and the ways in which these foods are utilized within the household. Adolescent nutrition is given less attention in nutrition policies, strategies and programs of low income countries; which might explain the high prevalence of both acute and chronic malnutrition among adolescents in developing countries.

Objective: -Prevalence of Adolescent Food Insecurity and Associated Factor among Coffee Producing Woredas in Jimma Zone, South West Ethiopia.

Methods: - Community based cross-sectional study was employed in coffee producing Woredas in Jimma zone, south west Ethiopia from April-May 2015. A total of 550 household having adolescents were included. In this study, multi-stage sampling procedure was employed to select sample households. Data were entered, cleaned and analyzed using SPSS Version 20. Bi-variate with a p-value ≤ 0.25 were considered candidates for multivariable logistic regression and p-value < 0.05 was considered as a cut-off point to determine statistical significance. Ethical clearance was obtained from concerned body.

Result: - Sixty percent of adolescents (60%) were found to be food insecure whereas prevalence of household food insecurity was 75%. Female sex of adolescent ($P < 0.001$), Household food insecurity ($P < 0.001$), female sex of household head ($P = 0.002$), high dependency ratio ($P = 0.001$) were positively independent predictors of adolescent food insecurity while educational status of household head and own land for farm were negatively associated with adolescent food insecurity. Majority of the respondent (92.2%) report seasonality of food scarcity during April- Jun which is during data collection period

Conclusion and recommendation: - Even though there is long-held belief that cash crop farmers are better off than non-cash crop farmers in food security because of high income they generate, this study highlighted the problem of food insecurity in coffee producing farmers. High prevalence of household and adolescent seasonality food scarcity occurred in average of three months namely April, May and Jun. This calls for the development of direct nutrition interventions targeting adolescents (like school feeding program should be an integral component of food security intervention in study area) to promote catch-up growth and break the intergenerational cycle of malnutrition by Improving multisectoral interventions approach to address multifaceted causes of food insecurity.

Key words: -Adolescent, Food Insecurity, Household And Coffee Farmer

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ACRONYMS

AIDS	Acquired Immune Deficiency Syndrome
AOR	Adjusted odds ratio
CI	Confidence interval
COR	Crude odds ratio
EHNRI	Ethiopia Health and Nutrition Research institute
FSP	Food security Package
HFIAS	Household food insecurity access scale
HH	Household
HHS	Household Hunger Scale
FAO	Food and agricultural organization
MOH	Ministry of Health
SNNPR	Southern nation and nationality peoples region
SSA	Sub-Saharan Africa
US	United States
WHO	World health organization

1. Introduction

1.1 Background

Food is essential in human being's life. Enough food in terms of quantity and quality for all people is an important factor for a nation to continue its development. Lack of food in long terms will lead to hunger and starvation that can cause death. So that enough food is a necessity condition to be well nourished. A food-secure household can grow or gather its own food, or earn money to buy enough food to provide adequate nutrition for all its members, irrespective of gender or age throughout the year (1). Individual food insecurity at the household level results from the interaction of a wider range of factors. These factors influence the amount and type of food which households are able to produce or purchase, and the ways in which these foods are utilized within the household (2).

Food security refers to food availability, access, quality, safety, and nutrition (3). Food security is a complex issue that has been defined in a variety of ways. Rome 1996 Declaration on World Food Security, which states that food security exists 'when all people at all times, have physical and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life (4).

Regardless of the specific definition for food security, its opposite – food insecurity – denotes hunger. In simple terms, those who are food insecure are either currently experiencing periods of insufficient food, insufficient dietary diversity, or are vulnerable to this risk (3).

Food insecurity can either be a chronic condition, or one that is transitory – following systemic shocks or emergencies. A third concept, that of seasonal food insecurity, lies somewhere between chronic and transitory. As the FAO explains, it is similar to chronic food insecurity as it is usually predictable and follows a sequence of known events. However, it can also be seen as recurrent, transitory food insecurity. Seasonal food insecurity occurs when there is a cyclical pattern of inadequate availability and access to food. This is associated with "seasonal fluctuations in the climate, cropping patterns, work opportunities (labor demand), markets and disease" (5).

Food security can be considered or analyzed at global, national, household, and individual levels, and can be either transitory or permanent (3). Over the last four decades several paradigm shifts have occurred in food security theory and policy. In the mid 1970s research

in relation to food security focused mainly on food production and supply, whereas in the early 1980s Amartya Sen highlighted the issues of access and entitlement in food security which became more common in policy initiatives after that point. In recent years the discussion has become less focused on food supply at the national level and more concerned with understanding risks, responses, and livelihood complexities as they relate to household food security (6).

Food security comprises three hierarchical components: availability, access and utilization (7). Availability is often measured through proxies at the population level, such as national agricultural output, while access and utilization are more often measured at the household and individual levels, respectively (8). While direct measures of food utilization exist, such as food frequency questionnaires (9), household food access has often been measured indirectly, through child anthropometry (7) or agricultural productivity (9). Measurement of all three aspects of food insecurity has posed persistent challenges, such as the difficulty in measuring the impact of short-term shocks on household food access (9).

One approach to measuring food insecurity at household is using the Household Food Insecurity Access Scale (HFAS), which was used in two recent surveys in Ethiopia. A baseline national food security survey in 2009 by the Ethiopian Health and Nutrition Research Institute (EHNRI) reported that 35 percent of households in Ethiopia were food insecure (11) and results from a number of developing country studies indicate that these qualitative self-assessments provide valid indicators of food insecurity at individual level (10).

1.2 Statement of the problem

Food insecurity as a concept concerns the risk of macronutrient or micronutrient deficiency, which may threaten the physical wellbeing of the individual (12). Malnutrition, hunger, and at the most extreme, starvation are extreme forms of food insecurity. However, there are also households that are food insecure and are not immediately experiencing malnutrition, hunger or starvation. It is difficult to reject that these extreme forms of food insecurity exist in the developing world.(13).

Despite growing attention in the world media and expanding aid efforts by many organizations, the world household food insecurity continues to worsen as many communities struggle with daily hunger and starvation (14). More than one billion people worldwide

experience some level of food insecurity, and there are many different proposals as to how to achieve food security (15). Different regions and populations may face distinct types of food insecurity; in the US where there is a surplus of food, food insecurity is the result of unequal resource distribution (16). In poor African countries, food insecurity is often caused by a lack of available food or inability to access food. In Latin America, food insecurity is generally caused by unequal access to food rather than a lack of total available food (16).

Food insecurity occurs worldwide, but is most entrenched in sub-Saharan Africa and Asia. It is especially prevalent in countries where the trade balance tilts toward exports, and in rural areas, where there is often limited access to any food imports. In rural communities, smallholder farmers must divide their land, time, and resources between crop production for income and subsistence agriculture for household food consumption (17).

Similarly, much of the population in Sub-Saharan Africa, particularly in rural areas, experiences “some degree of hunger over the rainy or “hungry” season, when food stocks dwindle and roads become muddy and impassable” (18).

In recent years, there has been growing discussion within the specialty coffee industry about the prevalence of seasonal food insecurity in coffee growing communities. Small-scale farmers are estimated to produce 70% of the world’s coffee supply (19). The isolated rural areas where the world’s best coffee is grown are exposed to multiple food insecurity risk factors (20). This is not a problem that is unique to one particular region or to only a subset of the population. Food insecurity exists in the homes of coffee producers who grow Robusta and Arabica coffees, and touches those who are farming both organically and conventionally.

Small-scale coffee producers are trying to eke out a sustainable livelihood with modest land holdings, high levels of initial capital investments in their coffee plants and a vulnerability to a volatile international price structure for their cash crop. Many small-scale coffee producers inhabit a fragile space, living in countries with relatively weak trade positions and facing supply chains that are merging to give greater power to importers, while also being held to the same high production standards as larger-scale producers who have additional resources to invest. These and other factors limit smallholders’ flexibility for making adjustments toward more productive or profitable crops, leaving them with insufficient cash resources to purchase food and limited time and/or land to dedicate to cultivation of food crops (21)

It is increasingly being recognized that improving food security is a basis for reducing poverty and hunger, but also for economic development. Despite notable progress in

economic growth and welfare improvement in developing countries over the recent decades, food security has not been attained in most developing countries. In particular, food insecurity continues to form a deep seated problem in several sub-Saharan African (SSA) countries. A recent Food and Agriculture Organization of the United Nations (FAO) report indicates that the number of undernourished people in Africa still remain high at 226.7 million (13). Even now, countries in the Horn of African are overwhelmed by heightened food security crises, making the problem of food security an issue of great concern to governments and the international community.

Food insecurity in developing countries has extremely serious consequences. It leads to individuals who are “vulnerable”, meaning that they are more exposed to and sensitive to livelihood shocks (22). This has profound implications for health, economic and social aspects of life, and even for the environments within which these individuals are located. Food insecurity often results in hunger and malnutrition, which in turn lead to reduced school attendance and learning capacity for children, less education and employment for women and girls, weakened immune systems, rising child mortality, impaired maternal and infant health, risky survival strategies, spread of HIV/AIDS, malaria and other diseases, unsustainable use of natural resources and reduced capacity to access markets and resources (22,25).

Ethiopia is one of the least developed countries in the world according to all measures of poverty. Despite the country has made progress in economic growth over recent decade, food insecurity is still evident. The 2012-2014 FAO assessment report estimated 32.9 million of the Ethiopian people are undernourished, indicating food shortage as an on-going problem in the country (13).

The causes of food insecurity problems in Ethiopia are complex and interrelated. Lack of governance and misdirected economic policies during the military regime (1974-1991), unfavorable weather fluctuations, high dependency on rain fed agriculture, and failure to bring about economic transformation have all contributed negatively to the country’s agricultural performance in past decades (26). Declining soil fertility, land degradation, and shrinking landholding due to population pressure had contributed to the deterioration food production. These and other factors are responsible for the country’s struggle to ensure food security.

Ensuring food security is one of the top national priorities and forms the cornerstone of the sustainable economic growth and poverty reduction strategy in Ethiopia. To this effect, the current government has embarked in November, 2002 an aggressive economic reform program. Policies that tackle food insecurity at household level are seen as the most effective way to reduce poverty. The integrated household food security package (FSP) program is among the programs introduced for this purpose(26).

Insecure access to sufficient and culturally-appropriate foods at all times by all people is a persistent and, in some places, increasing public health threat (13). Although it is often assumed that the household food insecurity status represents the experience of individuals within the household, studies – primarily from Asia – show that this frequently is not true (27). Many studies focus on within-household discrimination against young children and women with some data suggesting that young children are buffered from food insecurity by adults (28, 29). There have been far fewer attempts to link food insecurity at the household level to adolescents’ experience of food insecurity. This is especially true for individuals in sub-Saharan Africa (27).Issues linking youth, and food insecurity are especially salient in the context of sub-Saharan African

Adolescence is an energetically demanding period of the life course and one in which individuals are expected to make a series of key transitions into adulthood. Many of these key transitions are also affected by nutritional status. Insecure access to food may influence school attendance and achievement, reproductive decisions, migration strategies, employment options, and overall health and well-being (12, 30).

In this study, the aim is to contribute to the understanding of food security in Jimma zone coffee producing Woredas by investigating prevalence of adolescent food insecurity and its associated factor inGomma, Manna and Limu-kosa coffee producing Woredas.

2.1 Literature review

Food insecurity in the United States is not as severe as in the more underdeveloped countries; it is still a problem as 11 % of the U.S. population was found to be food insecure in 2007. In addition, one third of that number (4 % of total U.S. population) had very low food security “meaning that the food intake of one or more adults was reduced and their eating patterns were disrupted at times during the year because the household lacked money and other resources for food” (31). Households with incomes below the poverty line had a food insecurity rate of 37.7 % which was substantially higher than the national average. Other groups with higher than average food insecurity rates included households with children headed by single women (30.2 %) or single men (18.0 %); households headed by a black person (22.2 %) and households headed by a Hispanic person (20.1 %). Overall, households with children reported food insecurity at about double the rate for households without children (15.8 vs. 8.7 %) (31).

Study conducted in the Pico Duarte Coffee Region of the Dominican Republic out of 42 respondents, 32 (76%) of the total experienced food insecurity on an annual basis, primarily in the months just before the harvest (July–October). At this time of the year, income from the previous year’s harvest had usually been spent on basic necessities and the necessary farm investments throughout the year. (32)

Study conducted in Nigeria in 2007, 43% of the total sampled households were food secure while 57% were food insecure (33) and households with heads that are 51 years and above are more food secure than their younger counterparts in the study area. It could also be observed in that 61.4% of the male headed households were food secure while 40% of the female headed households were food secure. Hence, the proportion of food secure households was more in male headed households than the female headed. Household size is increasing; the percentage of food secure households keeps on decreasing. Hence, the size of households determines the food security status of the households. As the monthly income of the household head increases, the percentages of households that are food secure also increase and also as the educational status of household head increases food security also increase. (33)

Study conducted in Edo state Nigeria in 2010, education level of farmers, household size, output level of household and per capita income of the household are the major determinants of food insecurity in the area while the probability of a household being food insecure is due to household size, household dependency ratio, sex of household head, age, and the level of education of the household head were determinant of food insecurity. (34)

Using data from a large scale survey in 2004 in Zimbabwe, it was found that gender is not an important factor in determining the self-reported assessment of food security among children. Boys and girls report roughly the same level of food insecurity across different measures of food insecurity and these reports are roughly similar across the age gradient. (35)

The source of household income influences household food security, because there is evidence to suggest that 'lump-sum' sources of income, such as large payments for a cash crop or remittances, are less likely to be spent on improving household food security. Instead, the money is spent on non-food items. Control of income is therefore also a factor. (36)

The study conducted in Addis Ababa in 2012 food insecurity was high for age group of older than 45 years. This implies that incidence of food insecurity increased with age of household head in the study area and/or the elder head households live great deprivation than younger head households. Food insecurity was worse in female headed household than the male household head. This implies that males are to some extent more engaged in income generating activities than females in the study area. The food insecurity was concentrated in the group with illiterate. This analysis implies that illiterate households are more food insecure than literate ones since literate households are diversifying as well as increasing their means of income in order to drag out of food insecurity situation and lead quality life. (37)

According to the study done in Addis Ababa in 2014 among the total 550 households, 412 (74.9%) reported scores that classified them as food insecure. According to the scale, 128 (23.3%) of households were classified as severely food insecure, while 113 (20.5%) and 171 (31.1%) households were mild and moderately food insecure respectively (38). Household income, asset possession, house ownership, educational and employment status of household heads, and family size are factors associated with food security status. The results of multiple binary logistic regression models indicated that having a lower monthly income (AOR = 3.8, 95% CI = 1.5-9.7) was independently associated with food insecurity. In addition, household heads who were uneducated (AOR = 3.4, 95% CI = 1.6-6.8) daily

laborers (AOR = 2.96, 95% CI = 1.1-8.3), and government employees (AOR = 2.3, 95% CI = 1.1-4.9) were more likely to have higher food insecurity (38)

Study conducted in Sidama Zone using HFIAS and its recent modified version Household Hunger Scale (HHS) in 2011 the results revealed that about 54.1% of the households in the study area are found to be food insecure, and 28.8% of the households fall in mild to severe level of household hunger for an extended period of time during a year and educational status of household head is predictor of food insecurity. (39).

Study done in Wolita zone in 2014 determinants of the probability of being food secure as a function of various household characteristics among sampled households of the study area education, cultivated land size, frequency of extension visit, access for credit, access to farm plus off-farm activities, access to farm plus non-farm plus off-farm activities, safety net aid, use of chemical fertilizer, cooperative membership and agro-ecological zone were found to be the most important determinants affecting the state of food security and has shown positive impact on the probability of being food secure. (40)

Study done in Laelaymache Woreda, central zone of Tigri the probability of being food secure increases by a factor of 1.001 as the total cultivated land holding size increases by one hectare. (41)

Study conducted among members of the Koredegaga Peasant Association in the Eastern Oromia region of Ethiopia factors identified as having a significant influence on food security by the logistic regression model include farmland size, per capita aggregate production, fertilizer application, household size, ox ownership, and educational attainment level of farm household heads (42).

Study conducted in Jimma in 2011 a total of 428 (20.5%) adolescents was classified as food insecure (25.5% for girls and 15.8% for boys, $P < .001$) (43, 44).

Study conducted in Jimma, in 2012 Overall, 20.5% of adolescents were food insecure in the first round survey, while the proportion of adolescents with food insecurity increased to 48.4% one year later. During the one year follow up period, more than half (54.8%) of the

youth encountered transient food insecurity – that is, either during the first or the second round survey. During the follow up period, 14.0% of adolescents had chronic food insecurity (i.e. were food insecure at both rounds). Female sex of adolescents, high dependency ratio and household food insecurity were independent predictors of chronic adolescent food insecurity in urban, semi-urban, and rural areas, while educational status of the adolescents was negatively associated with chronic food insecurity in urban areas(45).

The proportion of female adolescents (15.9%) who were chronically food insecure was significantly higher than that of males (11.1%). A higher proportion (22.6%) of adolescents who were members of food insecure households in the first round of the survey were chronically food insecure compared to 8.3% of that in food secure households. Similarly, adolescents with educational status of primary level were twice as likely to be chronically food insecure compared to those with an educational status of secondary and above (14.4% vs. 7.0%). It was also observed that a higher proportion of adolescents in female headed households were chronically food insecure compared to those in male-headed households (17.5% vs. 13.2%). Adolescents whose mother (P=0.003) and father were illiterate were more often chronically food insecure than those whose parents were literate(45).

2.2 Significant of the study

Despite notable progress in economic growth and welfare improvement in developing countries over the recent decades, food security has not been attained in most developing countries. In particular, food insecurity continues to form a deep seated problem in several sub-Saharan African (SSA) countries.

Like other SSA countries, Ethiopia is one of the least developed countries in the world according to all measures of poverty. Despite the country has made progress in economic growth over recent decade, food insecurity is still evident. Previous studies have taken only the views of the household head into consideration in categorizing the food insecurity status of the household. By so doing, the possibilities of differential experiences of food insecurity by individual household members were ignored. To date, however, due to limited information regarding food insecurity for adolescent within a household in coffee producing Woredas in Jimma zone, intra-household differences in food insecurity among adolescent have not been examined. This paper will address this research gap.

Adolescent nutrition is given less attention in nutrition policies, strategies and programs of low income countries; which might explain the high prevalence of both acute and chronic malnutrition among adolescents in developing countries. In Ethiopia for instance, adolescents make up about 25% of the total population, but, both the national nutrition strategy and the national nutrition program do not identify them as specific target groups till 2013.

This study focus on adolescents that is often neglected in studies internationally because early teen years are widely regarded as a last opportunity for economically-disadvantaged girls and boys to experience physical growth that may compensate for some earlier nutritionally-related stunting. This type of catch-up growth is particularly critical for girls because nutritionally stunted mothers are at a higher risk of giving birth to low birth weight babies

The aim of this study was to assess the prevalence of adolescent food insecurity and associated factor in Jimma zone coffee producing Woredas. The results of this study will help health authorities and other concerned bodies to design relevant adolescent food insecurity prevention and control measures to ensure healthy growth and good nutrition of the study area.

Conceptual frame work

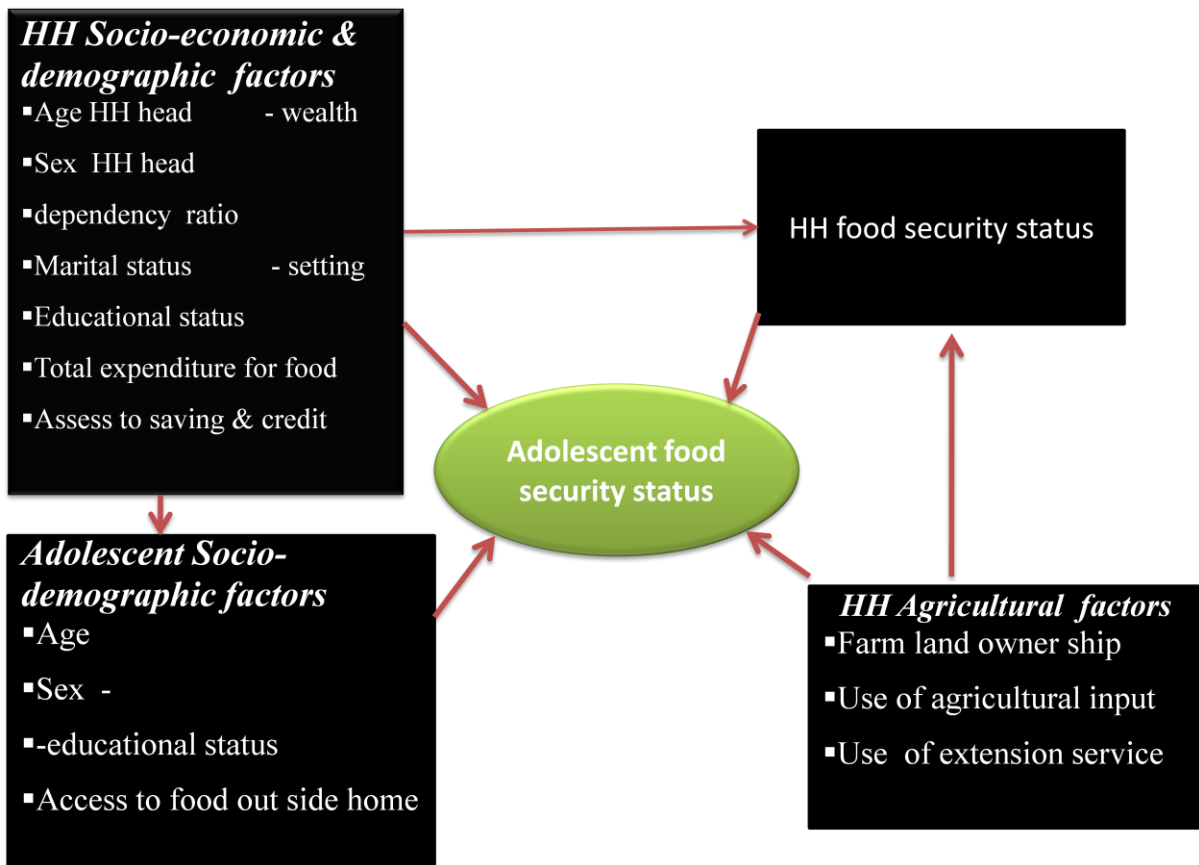


Figure 1 Conceptual framework developed after reviewing relevant literatures

3. Objectives

3.1 General objective

- To assess prevalence of adolescent food insecurity and associated factor among Mana, Gomma and Limu-kosa coffee producing Woredas in Jimma zone, south west Ethiopia May,2015

3.2 Specific Objectives

- To assess prevalence of adolescent food insecurity in coffee producing Woredas in Jimma zone.
- To identify factors associatedwith adolescent food insecurity in coffee producing Woredas in Jimma zone.

4. Methods and materials

4.1 Study area and period

The study was conducted in coffee producing Woredas in Jimma Zone, southwestern Ethiopia which is one of the 18 zones found in Oromiya region. Jimma zone has a total of 17 Woredas and two town administrations; nine of the Woredas are coffee producers. Out of the nine coffee producing Woredas study was conducted in three Woredas namely Gomma, Mana and Limu-kosa. According to 2004 national census there are a total population of 2,495,795 (male=1,255,130 female=1,240,665) and a total number of rural household 402,569. The area is found 1200-2500 above sea level and is categorized under climatic condition of Dega 15%, Weynadega 67% and Kolla 18% having an annual rainfall of 1200-2500mm. The study was conducted from April to May, 2015.

4.2 Study design

Community based cross sectional study was conducted among selected three coffee producing Woredas.

4.3 populations

4.3.1 Source population

- Adolescents living in coffee producer woredas of Jimma zone.

4.3.2 Study population

- Adolescents living in households in randomly selected from three coffee producing Woredas in Jimma zone.

4.3.3 Study unit

- Primary study unit: Household
- Secondary study unit: Adolescent

4.4 Inclusion & Exclusion criteria

4.4.1 Inclusion criteria:

- Households who were coffee producer and having adolescent.

4.4.2. Exclusion criteria

- A parent and adolescent who were mentally and physically incapable of being interviewed during the study period were excluded from the study.
- Household who do not harvest coffee at list once before the study began.

4.5 Sample size determination and sampling procedure

4.4.1 Sample size determination

Sample size was determined using single population proportion formula with the following assumptions: the expected prevalence of adolescent was 23.5% (from Jimma longitudinal family survey of youth)(29), confidence level of 95% and 5% degree of precision

$$n = \frac{Z (\alpha/2)^2 * P (Q)}{d^2}$$

Where, p= Proportion of food insecure adolescents (23.5%) = 0.235

$$Q = 1 - p$$

$$d = 0.05 \text{ (margin of error)}$$

$$Z \alpha/2 = 95\% \text{ Confidence level (1.96)}$$

$$n = \frac{(1.96)^2 * (0.235) (1 - 0.235)}{(0.05)^2}$$

$$(0.05)^2$$

$$n = \frac{3.8416 * 0.235 * 0.765}{0.0025} = 274.3$$

$$0.0025$$

$$n = 275$$

. Since eligible households are not directly selected, the calculated sample size should be adjusted for design effect (D). The design effect is assumed to be 2 as a result required sample size can be obtained by $n \times D$ which is **550**

4.4.2 Sampling technique and procedure

- Multi-stage cluster sampling procedure was employed to select sample households. Out of the 9 coffee producing Woredas in Jimma Zone, 3 Woredas were selected by simple random sampling technique
- Each Woredas were stratified into rural and urban Keble then proportion to population size sample household were allocated

- In each Kebele were considered as cluster and eligible household were identified with the help (guidance) of developmental army (DA). In households with more than one adolescent only one adolescent was selected randomly.

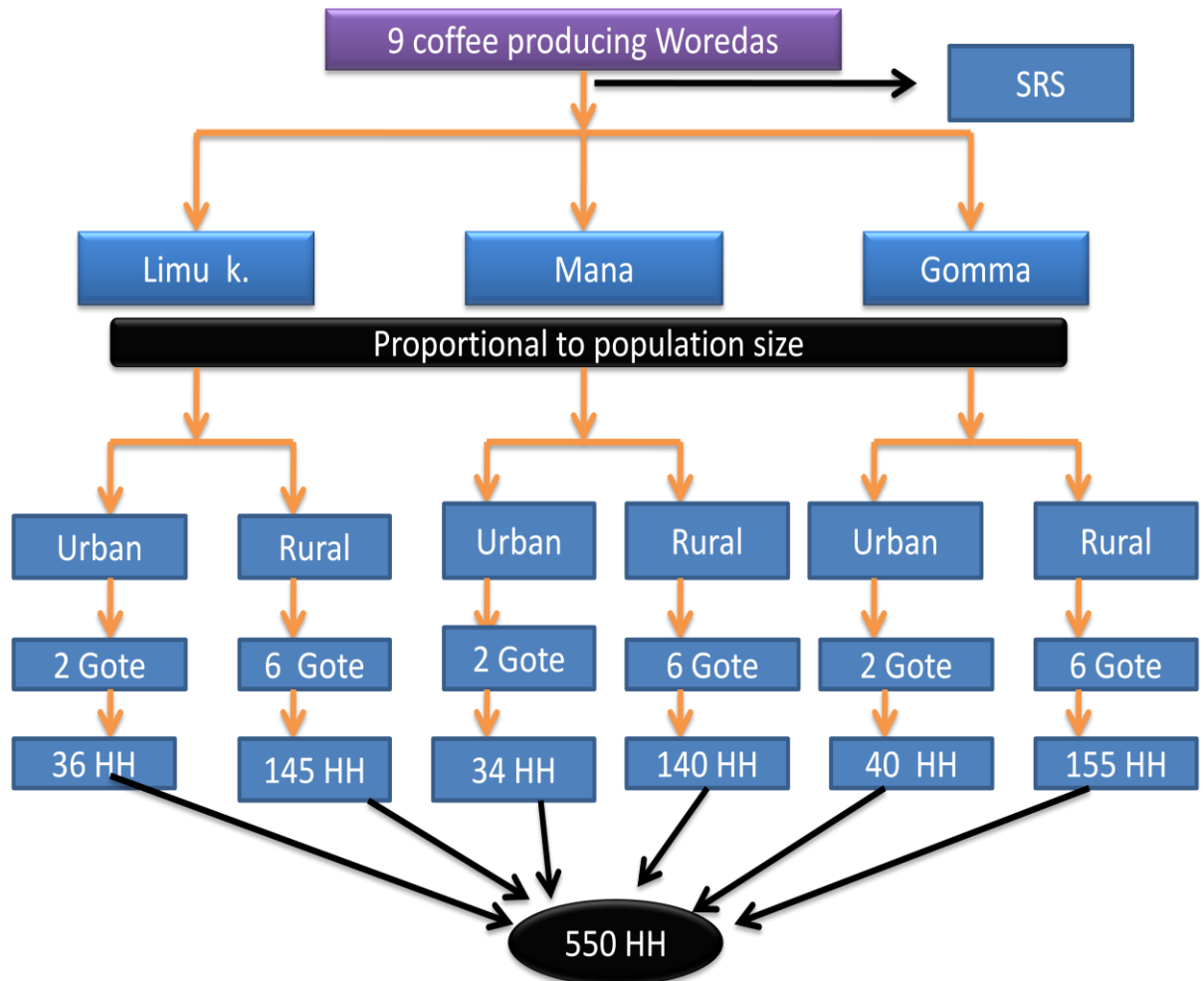


Figure 2 schematic presentation of sampling procedure of Jimma zone coffee producer south west Ethiopia may, 2015.

4.6 Study Variables

4.6.1 Dependant Variable

- Adolescent food insecurity

4.6.2 Independent variables

- HH Socio-economic and demographic factors: Age of household head, age of spouse, sex of household head, marital status, dependency ratio, total expenditure for food, access to saving and credit, wealth and setting.

- Household food security status
- HH Agricultural related factors: Farm land ownership, use of agricultural input (fertilizer, improved seed, insecticide and pesticide), use of agricultural extension service.
- Adolescent Socio-economic and demographic factors: age, sex, educational status and access to food outside home.

4.7 Data collection instrument and technique

Structured questionnaire was prepared after review of similar literatures and adapted to local context used to collect data. The questionnaire was first prepared in English, then translated to the local language and back translated to English by a third person to ensure consistency

The instrument comprises five parts: part 1: socio-demographics and economic characteristics, Part 2: Household wealth contains 27 variables like functioning radio, TV, etc, Part 3: Household Food Insecurity Access Scale (HFIAS) Measurement Tool which consist 9 items. Part 4: Socio demographic characteristics of adolescents and adolescent food insecurity measurement tool and Part 5: Agricultural related factors.

Data collectors

Ten BSC holders and three MSc holder that had prior experience of data collection were recruited and received two day of intensive training prior to the pre-test. After doing pretest feedback from the supervisor and data collectors were incorporated to enrich the questionnaire and make more applicable to the local situations and additional one day training with the final version of the questionnaire before beginning the actual interviews was given. Supervisor kept track of the field procedures and checked the completed questionnaires every day to ensure accuracy of the data collected.

Measurement

The HFIAS questions was used which is validated for developing country (29-31). Questions relate to three different domains of food insecurity. i. Anxiety and uncertainty about the household food supply ii. Insufficient quality (includes variety and preferences of the type of food) iii Insufficient food intake and its physical consequences Each question is asked with a recall period of four weeks (30 days). The respondent is first asked an occurrence question that is, whether the condition in the question happened at all in the past four weeks (yes or no). If the respondent answers “yes” to an occurrence question, a frequency-of-occurrence

question was asked to determine whether the condition happened rarely (once or twice), sometimes (three to ten times) or often (more than ten times) in the past four weeks.

Adolescent food insecurity was measured with a modified version of the household food security scales by selecting the items in the scales that apply to their personal experiences (29-31). Adolescents were asked to think of their own experience and not that of the household and then asked whether in the last one month they had (1) ever worried about having enough food (2) ever had to reduce food intake because of shortage of food or lack of money to buy food (3) ever had to go without eating because of shortage of food or money to buy food (4) ever had to ask outside the home for food. Rarely, sometimes and often responses were coded as one and "never" responses were coded as zero, and the responses were summed to produce an index of adolescent food security status and were further dichotomized as "food secure" for a score equal to zero "food insecure" for a score is greater than zero

Pretest

A pretest was done on 5% of the sample in Gera which had similar background one week prior to the data collection and amendment was made accordingly.

4.8 Data quality control

To maintain data quality: Questionnaire was translated to local language and back translated to English to check for consistency. Data collectors and Supervisor were trained for three days. A pretest was done on 5% of the sample in Geraworeda one week prior to the data collection and amendment was made accordingly for the instrument. Questionnaires were checked for their completeness and consistency at every step of data management.

4.9 Data processing and analysis

Data coding, cleaning was done manually and entry was done using Epi Data 3.1 version and then exported to SPSS version 20 for analysis. Frequencies and percentages of variables were produced and presented in table and graph and household wealth was measured by using 27 items to produce wealth index using principal component analysis then the index was ranked in to tertiles and labeled as low, middle and high wealth index. Odds ratios were calculated on some selected variables to determine the association between the outcome and selected variables through binary logistic regression. Variables with a p-value $< \text{or} = 0.25$ were entered into multiple logistic regression to identify predictors of adolescent food insecurity

and also control for confounders. Statistical significance was declared at p-value <0.05. Normality of the data was assessed visually using a P-P plot for all numerical variables. All variables were normally distributed and there was no need of transformation. Co-linearity between household food insecurity and adolescent food insecurity were checked using correlation coefficients and variance inflation factor test.

4.10 Ethical Clearance

The study was carried out after getting approval from the ethical clearance committee of Jimma University, Collage of Health Sciences. Then, data were collected after getting permission letter from each Woredas. Parent and adolescents gave informed verbal consent before interviews after informing about the objective of the study. In order to ensure privacy, mother and adolescent respondents were interviewed in separate rooms. The participants were assured that they have full right to participate or withdraw from the study.

4.11 Dissemination of research finding

Findings of the study will be presented and submitted to Jimma University, College of Health Sciences, Department of population and family health. It will be presented to Jimma University. The report will also be submitted to each Woredas health offices, agricultural bureau, zonal Health and agricultural office, zonal and Woredas Education Bureau and different NGOs. Finally Efforts will be made to present the findings at different seminars, meetings and workshops and publish in a scientific peer reviewed journal.

4.12 Operational Definition

- Adolescent: age group 10-19 based on WHO definition
- **Adolescent food insecurity:** if they response yes to any question (7)
- **Household food insecurity:** if the family experiences any of the conditions (uncertainty, insufficient quality and quantity of food) within the recall period. (If the answer to any of the questions is “rarely,” “sometimes,” or “often”. The only exception was among households in which the respondent’s answer to question 1 was “rarely” but the response to all the other questions was “never”) (7, 32).
- **Food secure household:** experiences none of the food insecurity (access) conditions, or just experiences worry, but rarely (7, 32).
- **A mildly food insecure household:** worries about not having enough food sometimes or often, and/or is unable to eat preferred foods, and/or eats a more monotonous diet than desired and/or some foods considered undesirable, but only rarely. But it does not cut back on

quantity nor experience any of three most severe conditions (running out of food, going to bed hungry, or going a whole day and night without eating) (7,32).

- **A moderately food insecure household:** sacrifices quality more frequently, by eating a monotonous diet or undesirable foods sometimes or often, and/or has started to cut back on quantity by reducing the size of meals or number of meals, rarely or sometimes. But it does not experience any of the three most severe conditions (7,32)
- **A severely food insecure household :** has graduated to cutting back on meal size or number of meals often, and/or experiences any of the three most severe conditions (running out of food, going to bed hungry, or going a whole day and night without eating), even as infrequently as rarely. In other words, any household that experiences one of these three conditions even once in the last four weeks (30 days) (7.32).

- **Household-**Refers to group 'of persons who live together as a unit and sharing from the same dietary pot on a regular basis.

Household dependency ratio: the ratio of people who are potentially expected to be nonproductive (age groups greater than 64 and less than 15 years) to people who are expected to be potentially productive (age 15-64 years).

Buffering: protection of adolescents from food insecurity by adult household members within food insecure households

5. RESULT

5.1 Adolescent socio demographic characteristics

From a total of 550 adolescents more than half (56.7%) of adolescents were females while the mean age of adolescents was 13.37(SD=: 2.448). Regarding educational status of adolescents, majority of them 383(69.6%) were attending secondary school followed by 110(20%) primary school. Only 223(40.5%) adolescents had access to food outside home (Table 1).

Table 1 Adolescent socio demographic Characteristics of Mana, Limu-kosa and Gomma coffee producing Woredas, Jimma zone, south west Ethiopia, May 2015

Variable n=550		Frequency	Percentage
Sex Of Adolescent	Male	238	43.3
	Female	312	56.7
Age	10-14	433	78.7
	15-19	117	21.3
Educational Status	No Formal Education	57	10.4
	Primary	110	20
	Secondary	383	69.6
Access To Food Outside Home	Yes	240	43.3
	No	312	56.7

5.2 Socio-demographic characteristics of household

From a total of 550 households 469(85.3%) were rural residence and 81(14.7%) were urban residence. Four hundred forty five (80.9%) households were headed by males. Majority of the respondents 496(90.2%) were married. Regarding religion more than two third (69.8 %) of the respondent's 384 were Muslims followed by 144 (26.2%) orthodox. Most (72 %) of the household were Oromo by ethnicity followed by Dawero 81(14.7 %). The mean household size was 5.89 (SD±1.65), Concerning household Dependency ratio (tertiles) 168(30.5%), 200(36.4%) and 182(33.1%) household had low, middle and high dependency ratio respectively while the mean number of dependent group was 2.99(SD±1.374) (Table 2).

Regarding educational status 263 (47.8%) Household head have completed grade 1-8 followed by secondary education 164(29.8%) whereas most of spouses 262(47.6%) have completed grade 1-8. Concerning household wealth, 227(41.3%), 158(28.7%) and 165(30%) households had low, medium and high wealth index, respectively while mean monthly expenditure to purchase food was 1114.38 Birr (SD 641.8). More than two third (68.4%) husband was responsible person to purchase food whereas. More than three quarter (76%) of household didn't had access to saving and credit (Table 2)

Table 2 Socioeconomic and demographic Characteristics of the households in Mana, Limu-kosa and Gomma coffee producing Woredas, Jimma zone, south west Ethiopia, May 2015.

Variable N=550		Frequency	Percent
Setting	Urban	81	14.7
	Rural	469	85.3
Sex Of HH Head	M	445	80.9
	F	105	19.1
Marital Status	Married	496	90.2
	Divorced	18	3.3
	Widowed	36	6.5
Religion	Muslim	384	69.8
	Orthodox	144	26.2
	Protestant	22	4
Ethnicity	Oromo	396	72
	Dawero	81	14.7
	Amehara	49	8.9
	Others	24	4.4
Educational Status Of HH Head	No Formal Edu.	123	22.4
	Primary Edu.	263	47.8
	Secondary Edu.	164	29.8
Educational Status Of Spouse	No Formal Edu.	223	40.5
	Primary Edu.	262	47.6
	Secondary Edu.	65	11.9
Wealth Index	Low	227	41.3
	Middle	158	28.7
	High	165	30
Dependency Ratio	Low	168	30.5
	Middle	200	36.4
	High	182	31.1
Access To Credit	Yes	132	24
	No	418	76

5.3 Agricultural related characteristics

Majority 474(86.2%) of the households had their own land for farm. More than half (53.6%) didn't use agricultural input and (58.4%) of households didn't use agricultural extension service (Table 3)

Table 3Agricultural related characteristics of the households in Mana , Limu-kosa and Gomma coffee producing Woredas, Jimma zone, south west Ethiopia, May, 2015.

VARIABLE n=550		Frequency	Percentage
Own land for farm	Yes	459	83.5
	No	91	16.5
Use of agricultural input	Yes	255	46.4
	No	295	53.6
use of agricultural extension service	Yes	229	41.6
	No	321	58.4

5.4 Seasonality of household food shortage

92.2% of the respondents report seasonality of food insecurity. During April-Jun time is the period in which most of the households face food scarcity (80.3%).

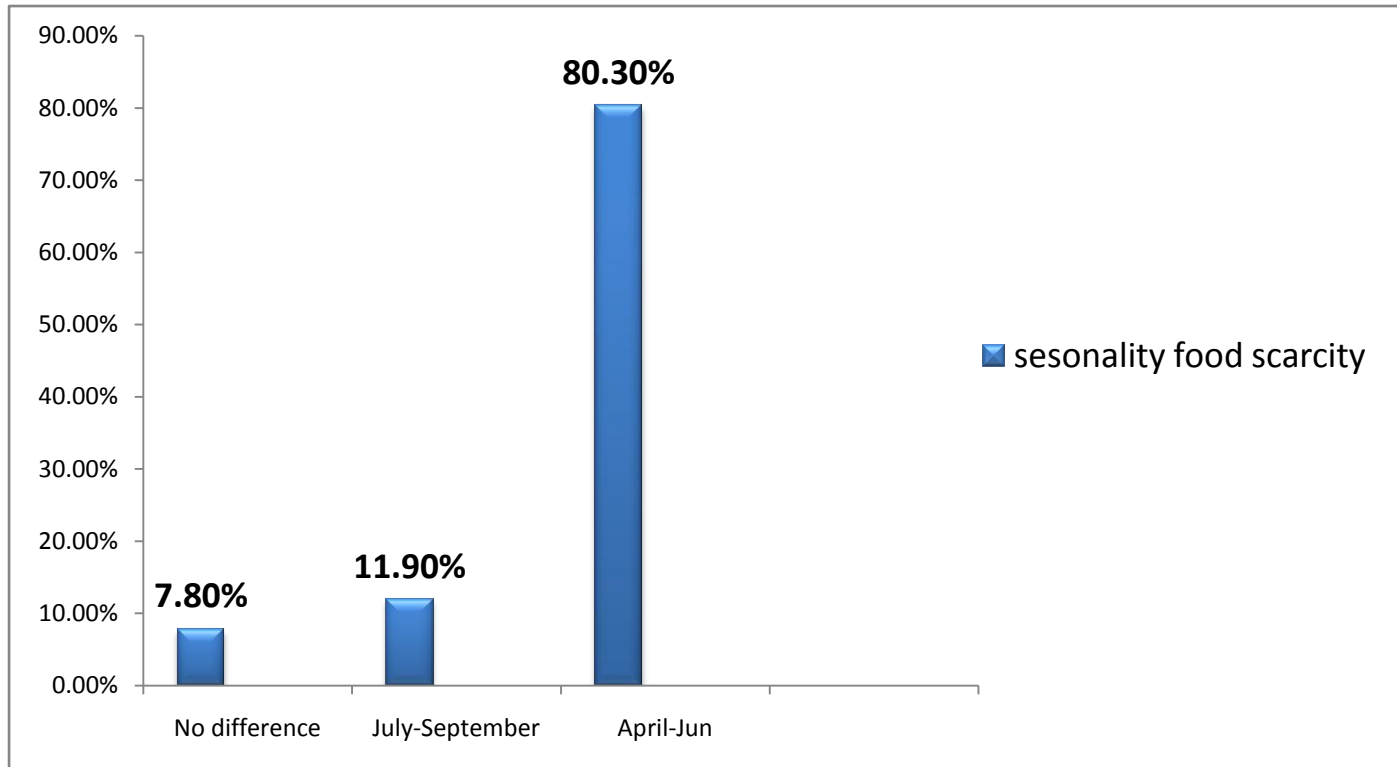


Figure 3 seasonality of food scarcity in Mana, Gomma and Limu-kosa coffee producing in Jimma zone, south west Ethiopia May 2015.

5.5 prevalence of adolescent food insecurity

High proportion of adolescents gave positive responses to reduce the number of meals(48.7%), (42.7%) worrying about food inaccessibility, 15.1 % had to spend the whole day without food and 35.7% ever had to ask outside the home for food (Table 4).

Table 4 prevalence of Adolescent food insecurity in Mana, Limu- kosa, and Gomma coffee producing Woredas in Jimma zone, south west Ethiopia, 2015

Characteristics		Number	Percent
Ever Worried About Food In Last Four Week	Never	315	57.3
	Rarely(1-7 Day)	216	39.3
	Sometimes(8-21 Day)	16	2.9
	Often(> 21 Day)	3	0.5
Reduced Food Intake	Never	282	51.3
	Rarely	252	45.8
	Sometimes	16	2.9
	Often	0	0
Spend The Whole Day Without Food	Never	467	84.9
	Rarely	81	14.7
	Sometimes	2	0.4
	Often	0	0
Ever Had To Ask Outside The Home For Food.	Never	389	70.7
	Rarely	147	26.7
	Sometimes	14	2.5
	Often	0	0

All rarely, sometimes and often responses were coded as one and "never" responses were coded as zero, and the responses were summed to produce an index of adolescent food insecurity and were further dichotomized as "food secure" for a score equal to zero "food insecure" for a score is greater than zero. Taking over all pictures prevalence of adolescent food insecurity was 59.6 %.(Figure 4)

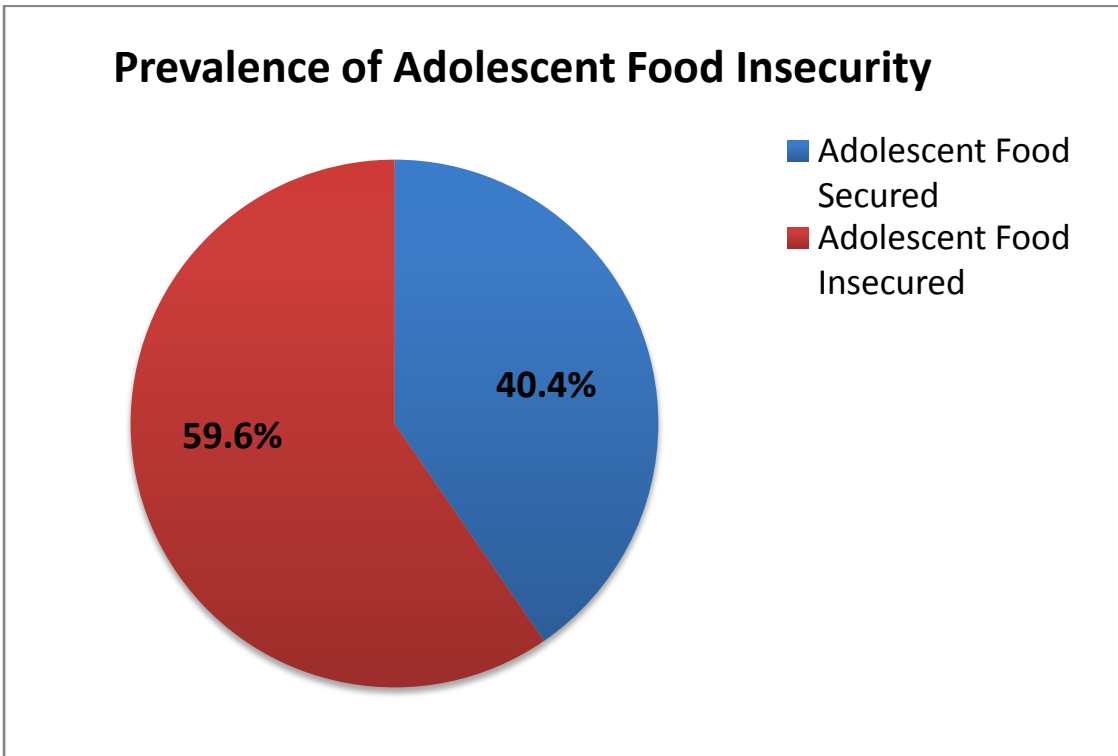


Figure 4 prevalence of adolescent food security status in Mana, Gomma and Limu-kosa coffee producing Woredas in Jimma zone, south west Ethiopia, May 2015.

5.6 Prevalence of household food insecurity

Taking over all pictures of HFIAS, the prevalence of household food insecurity was 75%. From those, 19(3.5%) were mildly food insecure, 321(58.4%) were moderately food insecure and 72(13.1%) were severely food insecure (Figure5).

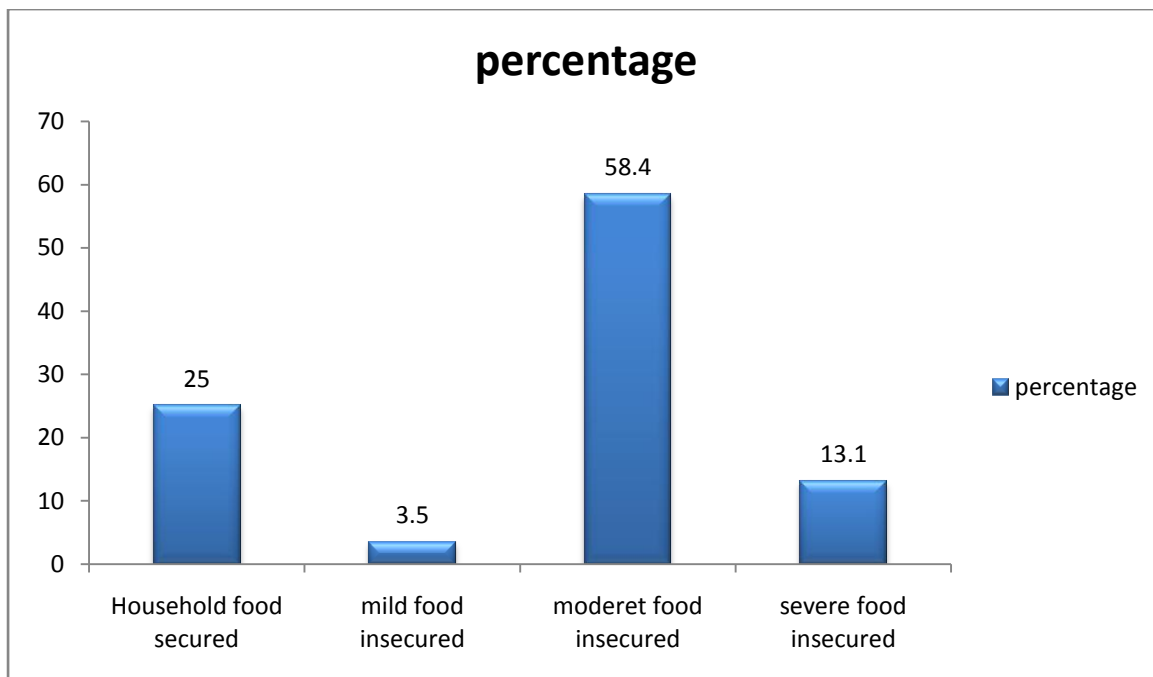


Figure5: prevalence of household food insecurity in Mana, Limu-kosa and Gomma coffee producing Woredas, Jimma zone, south west Ethiopia, May, 2015

5.7 Factors associated with adolescent food insecurity

Bivariate and multivariable logistic regression analysis was done using enter method to identify factors associated with adolescent food insecurity. On the Bivariate analysis, adolescent food insecurity had statistical association with 9 factors which had $p < 0.25$ setting, sex of household head, dependency ratio, household educational status, spouse educational status, household own land for farm, use of agricultural extension service, sex of the adolescent and household food security status.

Table5 Bivariate logistic regression predicting adolescent food insecurity in Mana, Gomma and Limu- kosa coffee producing Woredas in Jimma zone, south west Ethiopia, May 2015

Factors	Categories n=550	Adolescent Food Security Status				COR(95%CI)	P-Value
		secure		insecure			
		N	%	N	%		
Sex Of Household Head	M	207	46.5	238	53.5	1	1
	F	15	14.3	90	85.7	5.28(2.92-9.29)	0.0001
Educational Status Of Household Head	Secondary Education	110	67.1	54	32.9	1	1
	Primary Education	82	31.2	181	68.8	4.496(2.96-6.82)	0.0001
	No formal education	30	24.4	93	75.6	6.315(3.73-10.67)	0.0001
Dependency Ratio	Low	88	52.4	80	47.6	1	1
	middle	78	39	122	61	1.72(1.136-2.606)	0.01
	high	56	30.8	126	69.2	2.475(1.599-3.83)	0.0001
Sex Of Adolescent	M	121	50.8	117	49.2	1	1
	F	101	32.4	211	67.6	2.16(1.52-3.059)	0.0001
own land for farm	yes	209	45.5	250	54.5	1	1
	no	13	14.3	78	85.7	5.016(2.7-9.28)	0.0001
Household Food Security Status	secure	115	83.3	23	16.7	1	1
	insecure	107	26	305	74	14.25(8.65-23.47)	0.0001
setting	Rural	176	37.5	293	62.5	1	1
	Urban	46	56.8	35	43.2	0.457(0.28-0.76)	0.001
Spouse edu. status	No formal edu.	70	31.4	153	68.6	1	1
	Primary edu.	111	42.4	151	57.6	0.6(0.4-0.9)	0.013
	Secondary edu.	222	40.4	328	59.6	0.2(0.15-0.47)	0.001
Use of agricultural extension service	yes	104	45.4	125	54.6		1
	no	118	36.8	203	63.2	1.43(1.01-2.02)	0.042

Multivariable logistic regression analysis confirmed dependency ratio, sex of household head, household head educational status, land ownership, sex of adolescent and household food security status as potential predictor for adolescent food insecurity ($p < 0.05$). (Table 5).

By taking other variables constant adolescents living in female headed households were almost 2.8 times more likely to be food insecure than those living in male headed household [AOR=2.77, 95% CI (1.44-5.33)]. Adolescent living in household head not formally educated were almost 5 times more likely food insecure than those living in household head educational status secondary school. [AOR=4.925, 95% CI (2.636-9.201)], Adolescent living in household head educational status primary school were 3.4 times more likely food insecure than those living in household head educational status secondary school [AOR=3.44, 95% CI (2.09-5.67)]. Adolescents living in a household with high dependency ratio were 2.5 times more likely to be food insecure than those living in low dependency. [AOR=2.53, 95% CI (1.447-4.446)], Adolescents living in a household with middle dependency ratio were 2 times more likely to be food insecure than those living in low dependency [AOR=2.04, 95% CI (1.2-3.480)] (Table 5).

Female adolescents were 2 times more likely to be food insecure than male [AOR=2.18, 95% CI (1.4-3.48)], Adolescents living in a food insecure household were 9.4 times more likely to be food insecure than their counterparts [AOR=9.4, 95% CI (5.49-16.19)] and adolescent living in household who do not have their own land for farm were 2.5 times more likely food insecure than those living in household who have their own land for farm [AOR=2.484, 95% CI (1.24-4.96)] (Table 5).

Table5 Multivariable logistic regression models predicting adolescent food insecurity in Mana, Gomma and Limu-kosa coffee producing Woredas in Jimma zone, south west Ethiopia, May 2015

Factors	Categories n=550	Adolescent Food Security Status				COR(95% CI)	AOR(95% CI)
		secure		insecure			
		N	%	N	%		
Sex Of Household Head	M	207	46.5	238	53.5	1	1
	F	15	14.3	90	85.7	5.28(2.92-9.29)	2.773(1.443-5.33)
Educational Status Of Household Head	Secondary Education	110	67.1	54	32.9	1	1
	Primary Education	82	31.2	181	68.8	4.496(2.96-6.82)	3.446(2.09-5.676)
	No formal education	30	24.4	93	75.6	6.315(3.73-10.67)	4.925(2.636-9.20)
Dependency Ratio	Low	88	52.4	80	47.6	1	1
	middle	78	39	122	61	1.72(1.136-2.606)	2.049(1.20-3.48)
	high	56	30.8	126	69.2	2.475(1.599-3.83)	2.537(1.447-4.44)
Sex Of Adolescent	M	121	50.8	117	49.2	1	1
	F	101	32.4	211	67.6	2.16(1.52-3.059)	2.18(1.4-3.38)
own land for farm	yes	209	45.5	250	54.5	1	1
	no	13	14.3	78	85.7	5.016(2.7-9.28)	2.484(1.24-4.96)
Household Food Security Status	secure	115	83.3	23	16.7	1	1
	insecure	107	26	305	74	14.25(8.65-23.47)	9.43(5.49-16.19)

CI = Confidence interval.

AOR = Adjusted Odds ratio.

COR= Crud Odds ratio

6. DISCUSSION

This study revealed that more than half (59.6%) of adolescents were food insecure which was higher as compared to a research conducted in Jimma: Round 1(2005/2006); Round 2(2006/2007) which is 20.5% and 48.4%, respectively using HFIAS(Belachewetal, 2012)

The observed difference could be due to seasonal variation of food insecurity. This study was done in pre harvest (flowering) season of coffee which is more vulnerable to food insecurity. At this time of the year, income from the previous year's harvest had usually been spent on basic necessities and the necessary farm investments throughout the year

The study has found out that households and adolescent in the study areas face serious food scarcity for an average of three months in a year indicating that there are elements of seasonality in subsistence production in the study areas, which may prone food security deeper into the danger zone for certain periods of time. The fact that alternative rural economic opportunities (in addition to coffee production) are minimal and weak, leads to variations in the timing of coffee production, distribution and marketing (which may result in a cycle of relative plenty and scarcity). This again affects the households' food access. When a combination of other trigger factor operates, acute food insecurity follows these cycles of seasonality. It is important to note that food scarcity and thus food insecurity follow this rhythmic pattern of seasonality in the study areas. In the study areas, seasonality is particularly apparent between flowering and harvesting, and the most food scarce months are from April to Jun.

Female adolescent were 2 times more likely food insecure than their counterparts. [AOR=2.18(1.4-3.38)] This result is inconsistent with research conducted in Zimbabwe Who found out that there is no gender difference in adolescent food insecurity (Gundersen et al, 2007)

In this study gender stratification might be due to the fact that discriminatory buffering of food insecurity by adults and, or differential access to outside home food sources.

The findings do make sense within the socio-cultural context of Ethiopia, and indeed in many countries. There is little doubt that girls in Ethiopia experience a very different life than boys. Boys and young men are able to spend substantially more time outside of their homes and are therefore more likely to be able to seek food elsewhere along with this enhanced freedom they also enjoy the support of their families, and it is not uncommon for young men to receive a small amount of money from their parents during the day to help feed themselves whereas this is less likely to be the case among girls

This finding is best explained by other finding of the study stating only 28% of female had access to food outside home compared with 56% of male adolescent were superior opportunity for food access outside home.

Early teen ages are widely regarded as a last opportunity for economically-disadvantaged girls to experience physical growth that may compensate for some earlier nutritionally-related stunting. This type of catch-up growth is particularly critical for girls because nutritionally stunted mothers are at a higher risk of giving birth to low birth weight babies, resulting trans-generational cycle of malnutrition

This study showed high (75%) prevalence of household food insecurity computed from full version of HFIAS tool. Adolescents living in a food insecure household were more likely to be food insecure than adolescents living in a food secure household. This finding is consistent with study conducted in Jimma using HFIAS (Belachew et al 2012).

These results show that household level measures of food insecurity predict adolescent experiences of food insecurity. The prevalence of food insecurity measured at the household level exceeded the prevalence reported by adolescents at the individual level which is in line with predictions of the buffering hypothesis. Households are far more likely to be food insecure than are individual adolescent members, which suggests that some of the ill effects of household level food insecurity are absorbed by adult members, suggesting some buffering by adults.

In this study adolescents living in a household in which the head has completed primary and secondary school were less likely to be food insecure as compared to those adolescent whose

household head not formally educated. This finding is in line with study done in Wolita, Addis Ababa and Nigeria. (Gechoetal 2014, Birhanetal 2014 and Oluyole K. A. etal 2009) Possible explanation is that educated household heads have the capacity to innovate and to adopt timely technology and has better understanding of the cash crops that can help them to have a better income than the non-educated households.

Adolescents who were members of households with high and middle dependency ratio were more likely to report food insecurity compared with those in low dependency ratio. This study is in line with study conducted in Jimma and Nigeria (Belachewetal 2012, Ojogho 2010) This could mean that as the dependent age group size increases, there is larger number of people to be taken care of by the same source of income.

Adolescent who were member of household who did not have their own farm land were more likely to be food insecure than their counterpart which is in line with study in Wolita who found out that household who did not have their own farm land were more food insecure than household who have their own land. (Gechoetal, 2014)

Possible explanation is that household who rent land can pay the owner some portion of production.

Adolescent whose living in female headed household were more likely to be food insecure than male headed household. This finding is in line with study conducted in East Hararghe who found out that female headed household were more likely to be food insecure than their counterpart. (Bedeke, 2012)

This might be at grassroots level socio cultural gender difference in having asset ownership like land so female headed households do not have the required labor force to produce what needed by the household.

Contrary to the commonly forwarded direct relationship between wealth status and household food insecurity, this result didn't show any significant relationship between household wealth status and Adolescent food insecurity.

This finding is consistent with the study in Ghana cocoa farmers and Kenya tea producers (Anderman et al, 2014, David, 2015)

The reason might be justified by the existing inequality regarding management of household income, in most cash crop areas the husband is the one who entirely control household income, income controlled by husband is most likely will be spend for non food items

It might also be explained by the price volatility of coffee which is common in the global market

7. STRENGTH OF THE STUDY

The study focused on adolescents, a group that is often neglected in studies of international health. An additional strength of the study is interview that permits the comparison of household head and adolescent responses regarding food insecurity.

Since it was community based study it has resulted valuable and generalizable finding as per objectives of the study.

8. LIMITATION OF THE STUDY

Limitations, which hopefully will guide future research, is due to its cross sectional nature it is difficult to see cyclic pattern of seasonal food insecurity.

9. CONCLUSION AND RECOMMENDATION

9.1 CONCLUSION

Generally it was found that there was high prevalence of household and adolescent food insecurity in the study area. Sex of adolescent, dependency ratio, Sex of household head, educational status of household head, household food security status and farm land ownership are predictor of adolescent food insecurity.

9.2 RECOMMENDATION

➤ **At Household and Community Level**

- ☞ Make all efforts to actively involve in off-farm and income generating activities, diversify their economies in view of withstanding food shortages during crisis and avoid visible risks.

➤ **TO Jimma zonal health department and Limu, Mana and Gomma Woredas health office**

☞ The possible areas of intervention that emanate from the results of the study are as household size (dependant age group) and food insecurity are positively related serious attention has to be given to limit number of dependent age group in the study area. This can be achieved by creating sufficient awareness and strength effective family planning utilization in the study area households.

☞ Further, household head and spouse should be advised to reduce the size of their household and their dependency ratio.

➤ **For Women, Child and Youth affairs**

☞ Strengthening gender equality and the status of women and girls through effective behaviour change communications at grassroots level needs to be considered.

➤ **To MOH**

☞ High prevalence of adolescent food insecurity. This calls for the development of direct nutrition interventions targeting adolescents (like school feeding program should be an integral component of food security intervention) to promote catch-up growth and break the intergenerational cycle of malnutrition by Improving multi-sectoral interventions approach to address multifaceted causes of food insecurity

➤ **To Jimma zone education sector**

☞ The more household head educated, the higher will be the probability of educating family member and familiar with modern technology. So, strengthening both formal and vocational or skill training should be promoted to reduce food insecurity in the study area.

➤ **Agricultural sector**

☞ production of subsistence crops (including fruits and vegetables) and management of small scale livestock;

- ☞ promotion of alternative livelihoods for additional income generation and diversifying farms;
- ☞ activities to increase agricultural yields and introduce enhanced technologies for production as the primary livelihood strategy;

➤ **NGO**

- ☞ Intervention initiatives should focus on improving household and intra household food insecurity. Improved **multi sect oral interventions** are needed to address multifaceted causes of food insecurity.
- ☞ Further research is required to see cyclic pattern of seasonal food insecurity on the study area using different methodological approach like longitudinal study and also comparative study with non coffee farmers.

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**ANNEX I QUESTIONNAIRE
JIMMA UNIVERSITY**

COLLEGE OF HEALTH SCIENCES

DEPARTMENT OF POPULATION AND FAMILY HEALTH

*Title: prevalence of adolescent food insecurity and its associated factor
among coffee producing Woredas in Jimma zone, southern Ethiopia.*

Consent Form

My name is _____ I am working as data collector in a survey conducted by post graduate student of Human nutrition, Population and family health department in Jimma University, so as to assess prevalence of adolescent food insecurity and its associated factor among coffee farmer. I am going to ask you some questions that are very important for the programmers to plan effective food security prevention program. Your name will not be written on this form and will never be used with any information you may tell me. You don't have to answer any questions that you don't want to answer and you may end this interview at any time you want. However, your honest answer to these questions is very important for the purpose of the study. It will take 15 minutes to complete the questionnaire.

We would very much appreciate your participation in this survey by genuinely responding to the interviews. Would you be willing to participate?

Yes _____

If no thank and stop here.

GENERAL INSTRUCTIONS (asking questions and recording answers)

All questions in this paper are based on interviewing the mother and adolescent separately. It is very important that you ask each question exactly as it is written on the questionnaires. When you ask a question, you should listen to the mother's and adolescent response/answer, and then circle the code next to the category that best matches their answer/response. Avoid writing the name.

PART ONE: SOCIO ECONOMIC AND DEMOGRAPHIC CHARACTERSTICS OF HOUSEHOLD

Name	Variable	Response
A1	Date Of Interview	
A2	Setting	, 1=Rural 0= Urban
A3	Kebele	
A4	Village Gote	
A5	Questionnaire Identification Number	<input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/> <input type="text"/>
A6	Family Size Of The Respondent	_____Persons
A7	How Many Members Of Your Household Are Below Age 15 And Above 65?	_____
A8	How Many Members Of The Your Household Are Between The Age B/N 15-65	_____
A9	Marital Status Of The Respondent	1. Married 2. Widowed 3. Divorced
A10	What Is Your Marital Form	1. Mono 2. Polygamy
A11	Sex of household head	1 male 2 female
A12	Household Head's Educational Status	1=No Formal Education 2=Primary Education 3=Secondary Education 4=College/University
A13	Spouse's Education	1=No Formal Education 2=Primary Education 3=Secondary Education 4=College/University
A14	Age Of Father	_____Years
A15	Age Of Mother	_____Years
A16	Ethnicity	1 Oromo 2 Dawero 3 Amhara 4 Yem 5 Other

A17	Religion	1 orthodox 2 Muslim 3 protestant 4 other
A18	Access to credit	1 Yes 2 No
A19	Responsible person to purchase food	1 Husband 2 Spouse
A20	how many birr you spend to purchase food monthly	-----

PART TWO Household Wealth

Household Wealth

Now I will ask you about some fixed assets that your household have.

Does the household have any of the following properties? (Circle)		Yes	No
1	Functioning radio/Tape recorder/CD player	1	0
2	Functioning Television	1	0
3	Gas Stove	1	0
4	Kerosene stove	1	0
5	Electric stove	1	0
6	Bicycle	1	0
7	Motor Cycle	1	0
8	Cart/Gari	1	0
9	Watch (Hand/Wall)	1	0
10	Mobile phone	1	0
11	Plough	1	0
13	Sofa	1	0
14	Spring mattress	1	0
15	Sponge/Foam mattress	1	0
16	Cotton mattress	1	0
17	Grass Mattress	1	0
18	Chair/Stool	1	0
19	Generator	1	0
20	Milling	1	0
21	Water pump	1	0
22	Oxen	1	0
23	Cows	1	0
24	Horse/mules	1	0
25	Goats/Sheep	1	0
26	Chickens	1	0
27	Donkey	1	0

PART THREE: HOUSEHOLD FOOD INSECURITY MEASURING TOOLS

I am going to ask you questions about your household’s food supply over the past four weeks. Food supply includes staples and any other foods in your diet and the diets of all members of your household.

501	In the past four weeks, did you worry that your household would not have enough food?	0=No(skip to Q502) 1=Yes ___
501 a.	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks) ___
502	In the past four weeks, were you or any household member not able to eat the kinds of foods you preferred because of a lack of resources?	0=No(skip to Q503) 1=Yes ___
502.a	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks) ___
503	In the past four weeks, did you or any household member have to eat a limited variety of foods due to a lack of resources	0=No(skip to Q504) 1=Yes ___
503.a	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the ___

		past four weeks) 3 = Often (more than ten times in the past four weeks	
504	In the past four weeks, did you or any household member have to eat some foods that you really did not want to eat because of a lack of resources to obtain other types of food?	0=No(skip to Q505) 1=Yes ___
504.a	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks ___
505	In the past four weeks, did you or any household member have to eat a smaller meal than you felt you needed because there was not enough food?	0=No(skip to Q506) 1=Yes ___
505.a	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks ___
506	In the past four weeks, did you or any other household member have to eat fewer meals in a day because there was not enough food?	0=No(skip to Q507) 1=Yes ___
506.a	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the ___

		past four weeks) 3 = Often (more than ten times in the past four weeks	
507	In the past four weeks, was there ever no food to eat of any kind in your household because of lack of resources to get food?	0=No(skip to Q508) 1=Yes ___
507.a	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks ___
508	In the past four weeks, did you or any household member go to sleep at night hungry because there was not enough food?	0=No(skip to Q509) 1=Yes ___
508.a	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks ___
509	In the past four weeks, did you or any household member go a whole day and night without eating anything because there was not enough food?	0=No(skip) 1=Yes ___
509.a	How often did this happen?	1 = Rarely (once or twice in the past four weeks) 2 = Sometimes (three to ten times in the past four weeks) 3 = Often (more than ten times in the past four weeks ___

Seasonality of food scarcity

Which month do you feel your household is vulnerable for food scarcity? Make X on it.

Sep.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	April	May	Jun	July	Aug.
------	------	------	------	------	------	------	-------	-----	-----	------	------

PART FOUR Agricultural characteristics of household

A20	Did you have your own land for farm?	1. Yes 2. No
A21	Did you use agricultural input (fertilizer, improved seed, insecticide, pesticide)?	1. Yes 2. NO
A25	Did you use agricultural extension service	1. Yes 2. No

PART FIVE Adolescent Food Insecurity Measuring Tool

I would like to ask you some questions about problems you may have encountered with food, these questions are about you personally and not your household overall.

G1	Age Of Adolescent	-----
G2	Sex Of Adolescent	1 Male 0 Female
G3	Educational Status Of Adolescent	1 No Formal Education 2 Primary 3 Secondary
G4	Access To Food Outside Home	1 Yes 2 No
G5	In The Last Four Weeks, How Many Days Did <u>You</u> Worry That You Would Run Out Of Food Or Not Have Enough Money To Buy Food?	1 Never 2 1-7 Days

		3 8-21 Days 4 More Than 21 Days	
G6	In The Last Four Weeks, How Many Days Have You Had To Reduce The Number Of Meals Eaten In A Day, Because Of Shortages Of Food Or Money?	1 Never 2 1-7 Days 3 8-21 Days 4 More Than 21 Days	
G7.	In The Last Four Weeks, How Many Days Have You Had To Reduce The Size Of Meals Eaten In A Day, Because Of Shortages Of Food Or Money?	1 Never 2 1-7 Days 3 8-21 Days 4 More Than 21 Days	
G8	In The Last Four Weeks, How Many Days Have You Had To Spend The Whole Day Without Eating, Because Of Shortages Of Food Or Money?	1 Never 2 1-7 Days 3 8-21 Days 4 More Than 21 Days	
G9	In The Last Four Weeks, How Many Days Have You Had To Ask For Food Or Money To Buy Food?	1 Never 2 1-7 Days 3 8-21 Days 4 More Than 21 Days	